**Day 1 Lab Assignments**

**Use MongoDB to do the following assignments:**

1. Create database named: FacultySystemDB.

“

Use FacultySystemDB

“

1. Create collection (student) that has:
   * FirstName: string
   * LastName: string
   * Age: Number
   * Faculty: An object that has Name and Address
   * Grades: An array of objects, each object has: CourseName, Grade, Pass (Boolean).
   * IsFired: Boolean

“

db.createCollection(“student”)

db.student.insert({FirstName:” Alaa”,

LastName:” Osama”,

Age:23,

Faculty: {Name:” Faculty of engineering”, Address:” Alexandria university”}, Grades: [{CourseName:” Mathe”, Grade: “Very good”, Pass: true},

{CourseName:” Arabic”, Grade: “Exceland”, Pass: true},

{CourseName:” Science”, Grade: “Fail”, Pass: False}],

IsFired: False})

“

1. Insert 3 (at least) documents in Student collection with different values.
   * Try inserting one record each time

db.student.insertOne({FirstName:” Nouran”,

LastName:” Ebrahim”,

Age:22,

Faculty: {Name:” Faculty of engineering”, Address:” Alexandria university”}, Grades: [{CourseName:” Mathe”, Grade: “Very good”, Pass: true},

{CourseName:” Arabic”, Grade: “Exceland”, Pass: true},

{CourseName:” Science”, Grade: “good”, Pass: True}],

IsFired: False})

* + Try inserting collection using on insert statement.

db.student.insert([{FirstName:” Ahmed”,

LastName:” Osama”,

Age:25,

Faculty: {Name:” Faculty of engineering”, Address:” Alexandria university”}, Grades: [{CourseName:” Mathe”, Grade: “Very good”, Pass: true},

{CourseName:” Arabic”, Grade: “Exceland”, Pass: true},

{CourseName:” Science”, Grade: “Fail”, Pass: False}],

IsFired: False},

{FirstName:” Shimaa”,

LastName:” Kamel”,

Age:23,

Faculty: {Name:” Faculty of engineering”, Address:” Alexandria university”}, Grades: [{CourseName:” Mathe”, Grade: “Very good”, Pass: true},

{CourseName:” Arabic”, Grade: “Exceland”, Pass: true},

{CourseName:” Science”, Grade: “Fail”, Pass: False}],

IsFired: False},

{FirstName:” Mohamed”,

LastName:” saad”,

Age:30,

Faculty: {Name:” Faculty of engineering”, Address:” Alexandria university”}, Grades: [{CourseName:” Mathe”, Grade: “Very good”, Pass: true},

{CourseName:” Arabic”, Grade: “Exceland”, Pass: true},

{CourseName:” Science”, Grade: “Fail”, Pass: False}],

IsFired: False}

])

1. Retrieve the following data:
   * All Students.

db.student.find().pretty()

* + Student with specific First Name.

db.student.find({FristName:”Alaa”}).pretty()

* + Students who his First Name=Ahmed, or Last Name= Ahmed.

db.student.find({$or:[{FristName:”Ahmed”}, {LastName:”Ahmed”}]).pretty()

* + Students that their First name isn't "Ahmed".

db.student.find({$ne:[{FristName:”Ahmed”}]).pretty()

* + Students with Age less than 21.

db.student.find({Age:{$lt:21}}]).pretty()

* + All fired students.

db.student.find({IsFired:”true”}).pretty()

* + Students with Age more than or equal to 21, and their faculty isn't NULL.

db.student.find({$and:[{Age:{$lte:21}, {Faculty:Null}]).pretty()

* + Display student with specific First Name, and display his First Name, Last name, IsFired fields only.

db.student.find({FristName:”Nouran”, LastName:1, IsFired:1}).pretty()

1. Update the student with specific FirstName, and change his LastName.
   * Try Update() statement.

db.student.UpdateOne({FirstNamse:”Alaa”},{$set:{LastName:”Mohamed”}})

* + Try Update() with Mulit option.

db.student.Update({FirstNamse:”Alaa”},{$set:{LastName:”Mohamed”}},

{multi:true})

* + Try Save().

db.student.save({FirstNamse:”Alaa” , LastName:”Mohamed”})

1. Delete Fired students.

db.student.deleteMany({IsFired:false})

1. Delete all students collection.

db.student.drop()

1. Delete the whole DB.

db.dropDatabase()

1. Create new database named: FacultySystemV2.

Use FacultySystemV2

* + Create student collection that has (FirstName, lastName, IsFired, FacultyID, array of objects, each object has CourseID, grade).

db.createCollection(“student”)

db.student.insert({FirstName:” Alaa”,

LastName:” Osama”,

IsFired: False,

FacultyID: [{CourseID:” Mathe”, Grade: “Very good”},

{CourseID:” Arabic”, Grade: “Exceland”},

{CourseID:” Science”, Grade: “Fail”}]})

* + Create Faculty collection that has (Faculty Name, Address).

db.createCollection(“Faculty”)

db.student.insert({Faculty Name:” Faculty of engineering”,

Address:” Alexandria university”})

* + Create Course collection, which has (Course Name, Final Mark).

db.createCollection(“Course”)

db.student.insert({Course Name:” Mathe”,

Final Mark:90})

**Bonus:**

1. Install Redis database, and try to insert and select data from it.
2. Retrieve and insert to MongoDB using a nodeJs
3. Display each student along with his grades in course he studied from FacultySystemV2.
4. Add your own key to any collection.

**<Script>document.write(“Thank YOU”) </Script>**